| A. Most stron | gly | dise | ase- | ass | ocia | ted | patt | erns                 |
|---------------|-----|------|------|-----|------|-----|------|----------------------|
| Marker        | 01  | 02   | 03   | 04  | 05   | 06  | 07   | 08                   |
| Pattern01     | 4   | 1    | 6    | 6   | 3    | *   | *    | *                    |
| Pattern02     | 4   | 1    | 6    | 6   | 3    | 6   | *    | *                    |
| Pattern03.    | 4   | 1,   | 6    | 6   | *    | 6   | *    | *                    |
| Pattern04     | 4   | 1    | 6    | *   | 3    | 6   | *    | *                    |
| Pattern05     | 4   | 1    | *    | 6   | 3    | *   | *    | *                    |
| Pattern06     | 4   | 1    | *    | 6   | 3    | 6   | *    | *                    |
| Pattern07     | 4   | *    | 6    | 6   | 3    | *   | *    | *                    |
| Pattern08     | 4   | *    | 6    | 6   | 3    | 6   | *    | *                    |
| Pattern09     | 4   | *    | 6    | *   | 3    | 6   | *    | *                    |
| Pattern10     | *   | 1.   | 6    | 6   | *    | *   | *    | *                    |
| Pattern11     | *   | 1    | 6    | 6   | 3    | *   | *    | *                    |
|               |     |      |      |     |      |     |      |                      |
| Frequency     | 9   | 11   | 11   | 11  | 10   | 6   | 0    | 0                    |
|               |     |      |      |     |      |     |      | STANDARY<br>STANDARY |

FIG. 1A

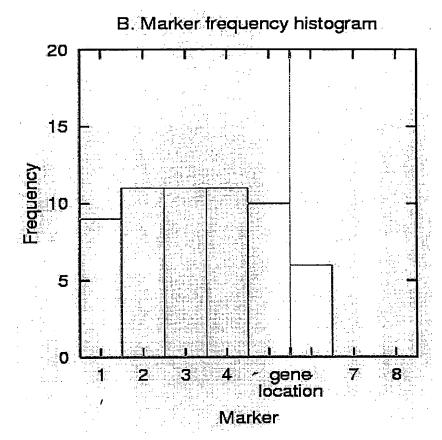


FIG 1B

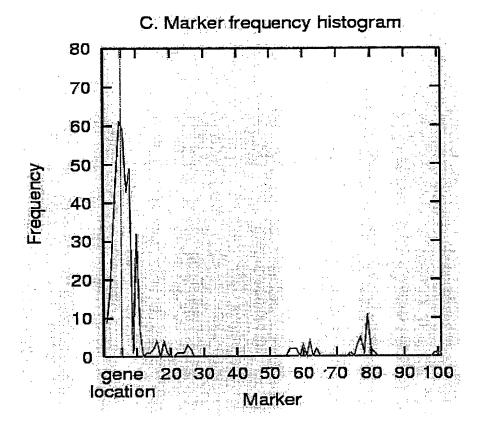


FIG. 1C

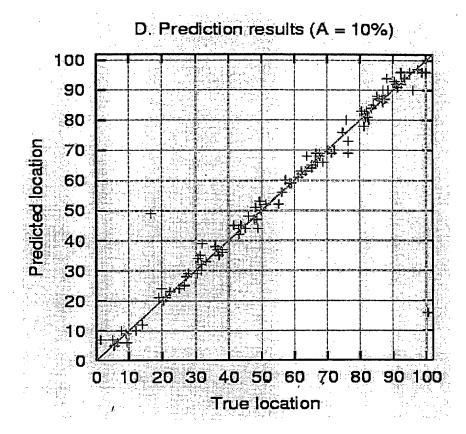


FIG. 1D

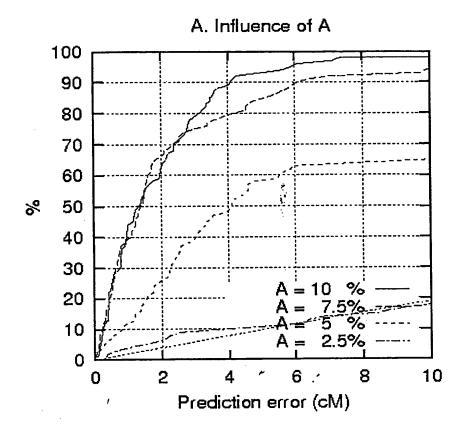


FIG. 2A

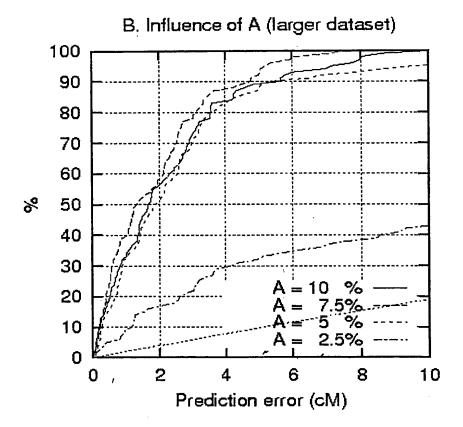


FIG. 2 B

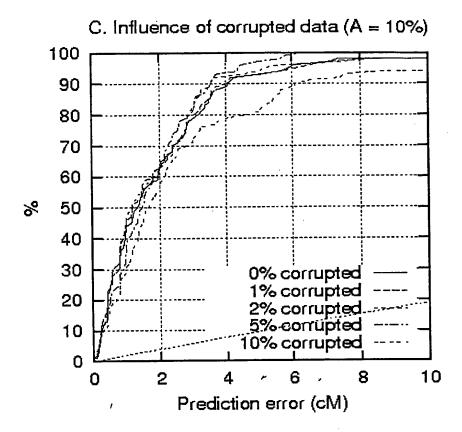


FIG. 2C

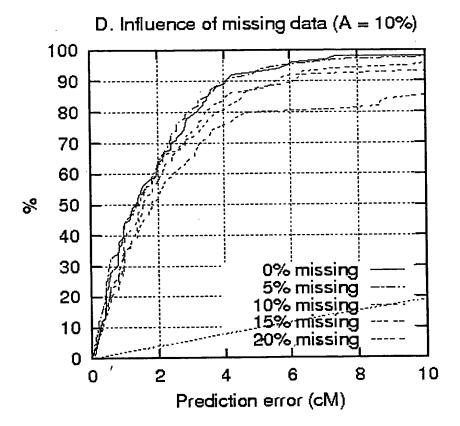


FIG. 2D

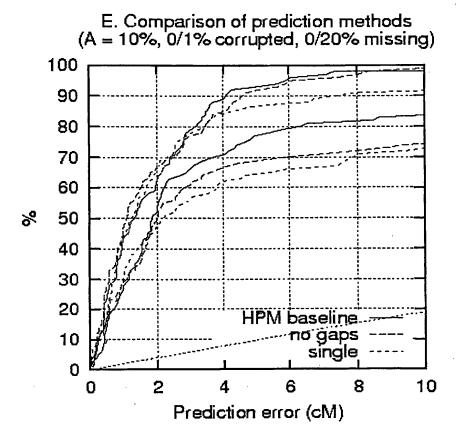


FIG. 2E

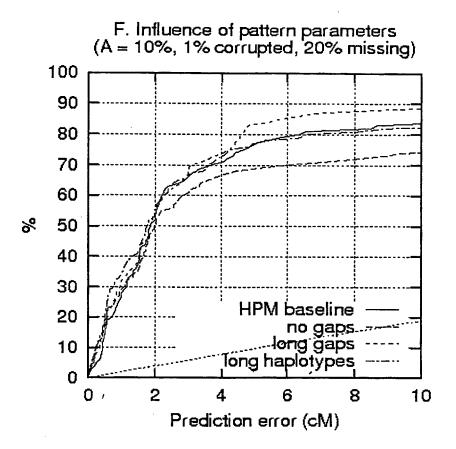


FIG. 2F

#### A. Permutation surface

#### Observed frequency —

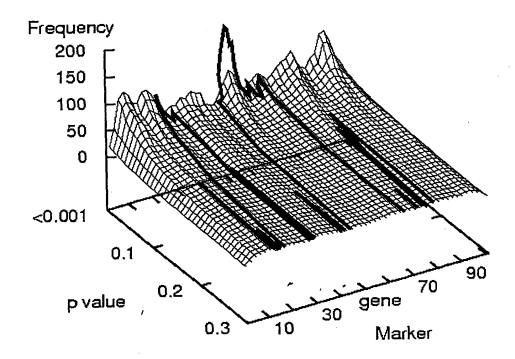


FIG. 3A

### B. Marker-wise frequencies for some p values

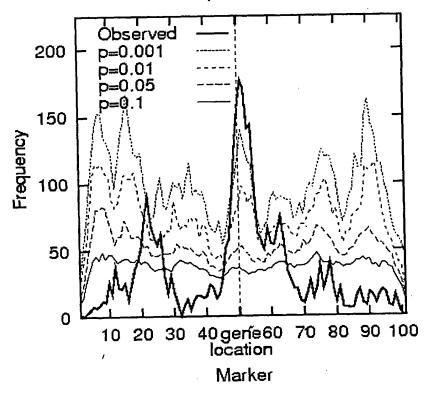


FIG. 3B

## C. Marker-wise frequencies for some p values

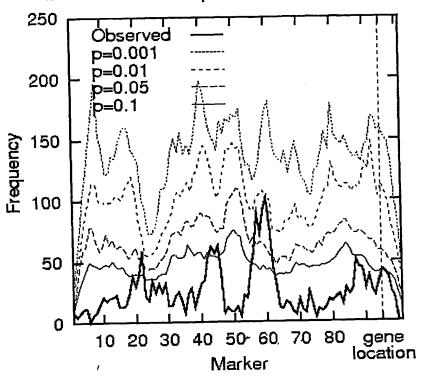


FIG. 3C

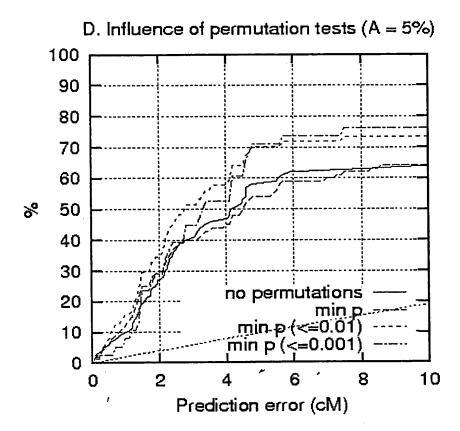


FIG. 3D

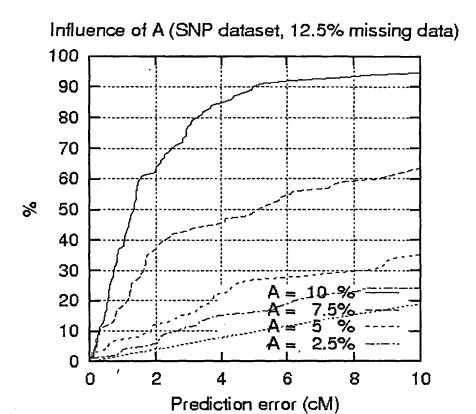


FIG. 4

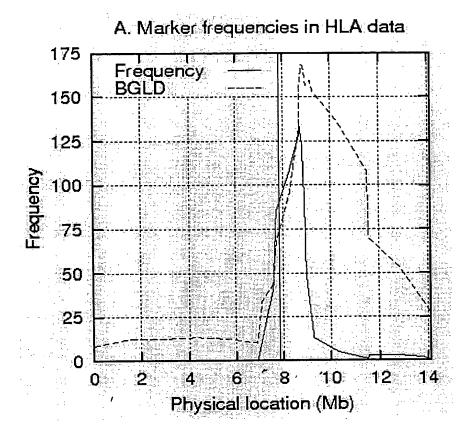


FIG. 5A

### B. P values and frequency ratios in HLA data

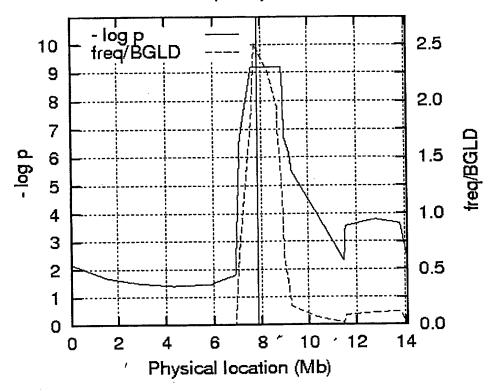


FIG. 5B

# A. Marker frequency histogram (2 genes)

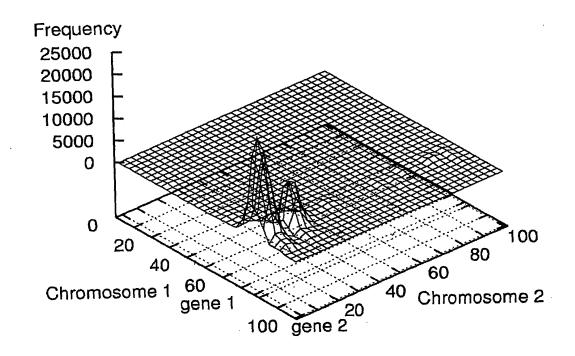


FIG. 6A

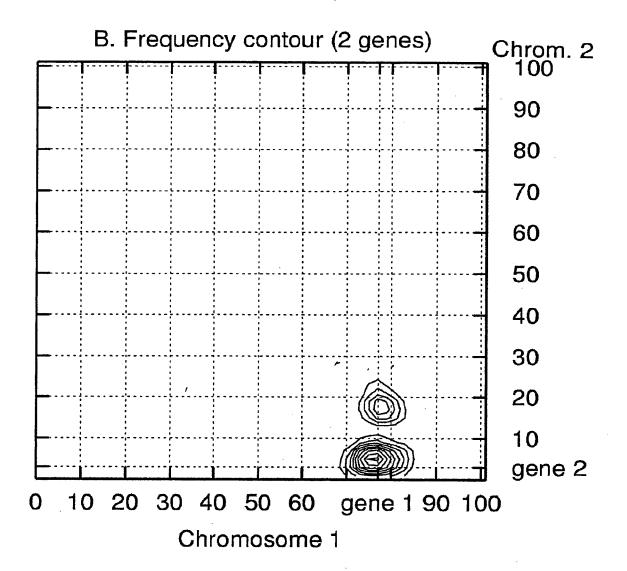


FIG. 6B

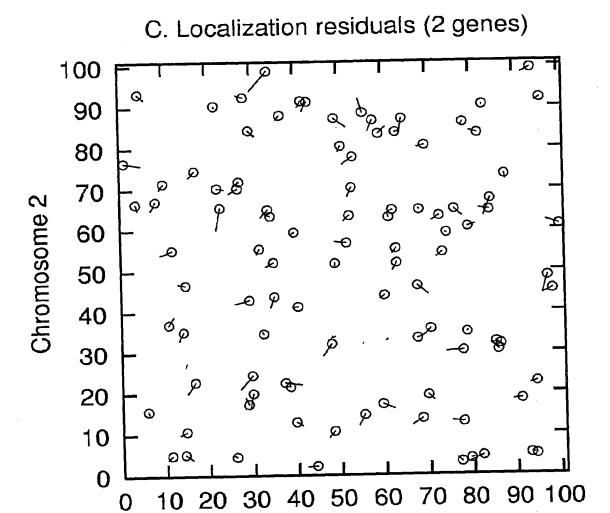


FIG. 6C

Chromosome 1



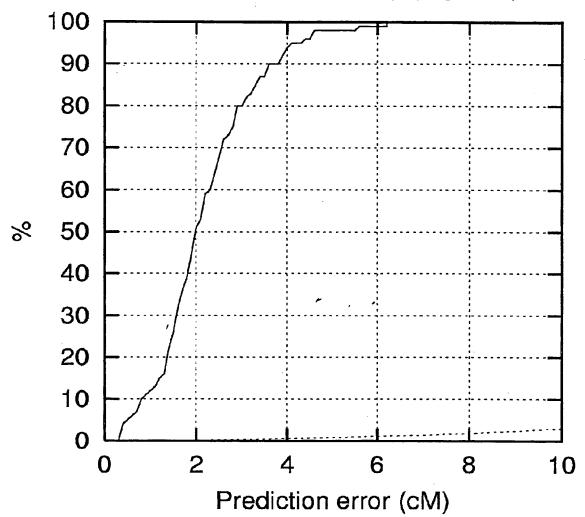
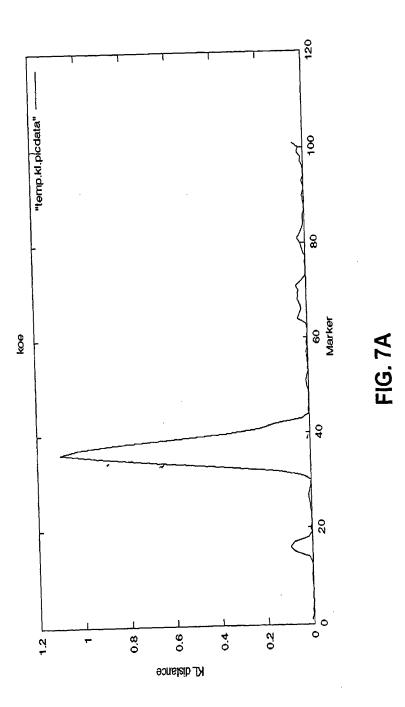


FIG. 6D



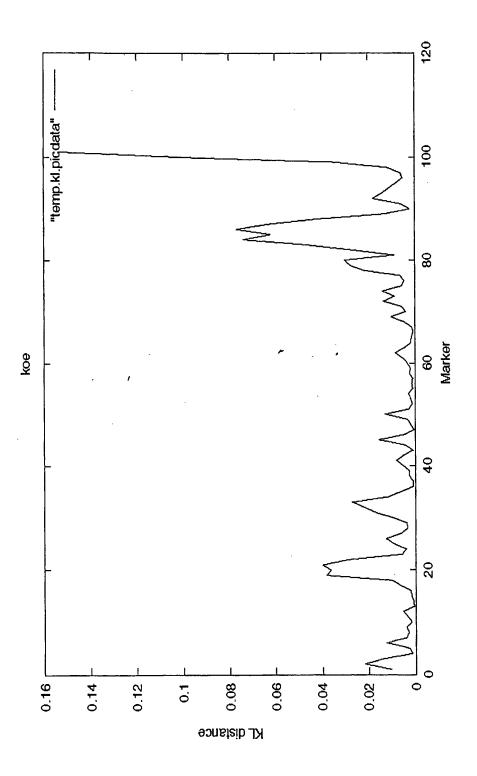


FIG. 7E